DATE: November 30, 2015 FILE REF: WBIC 519700

TO: Mike Donofrio
Underwood Lake file

FROM: Tammie Paoli

SUBJECT: 2015 Underwood Lake Spring Electroshocking Survey

Underwood Lake is a 45 acre clear seepage lake in southern Oconto County, approximately 5 miles west of Coleman, WI. The lake has a maximum depth of 36 feet. The approximate 1.2 miles of shoreline is primarily upland hardwoods and is lightly developed. Thirty docks were counted on a recent aerial photo. The littoral zone is mostly sand, with some gravel and muck. There is a small public access/boat ramp on the northwest side of the lake that is owned by Oconto County. Eurasian water-milfoil was first documented in the lake in 2002 and Chinese mystery snail was found in 2011. WDNR Science Services conducted a long-term Eurasian water-milfoil monitoring project from 2006-2014 on Underwood Lake (Michelle Nault, personal communication).

Fish surveys in the 1950's and 1960's found that the lake had a high density of stunted panfish and few predators. As a result, northern pike stocking was initiated but ceased in 1980. A 1978 electrofishing survey found continued problems with stunted panfish and low predator density. No fish surveys were conducted in the 1980's or 1990's. The Leigh Lake and Underwood Lake Conservation Club began stocking walleye in 2003 (Table 1). A fall electroshocking survey in 2006 found high numbers of small bluegill, with most being 3 to 4 inches. No aging structures were collected on bluegills in 2006 so it is unclear if the bluegill population was considered stunted. Largemouth bass populations were improved, but slow growth for bass ages 5 and older was noted. No walleye were captured in the 2006 survey.

Table 1. The species, number, size and source of fish stocked into Underwood Lake, 1980 to 2015.

Year	Species	Number Fish Stocked	Avg Fish Length In	Source Type
1980	NORTHERN PIKE	150	-	FEDERAL HATCHERY
2003	WALLEYE	295	6.8	PRIVATE HATCHERY
2005	WALLEYE	400	6.5	PRIVATE HATCHERY
2006	WALLEYE	255	6.5	PRIVATE HATCHERY
2007	YELLOW PERCH	250	6.5	PRIVATE HATCHERY
2007	WALLEYE	200	7.9	PRIVATE HATCHERY
2008	WALLEYE	250	7	PRIVATE HATCHERY
2009	WALLEYE	250	7	PRIVATE HATCHERY
2011	WALLEYE	250	7	PRIVATE HATCHERY
2011	YELLOW PERCH	250	7	PRIVATE HATCHERY
2012	WALLEYE	316	8	PRIVATE HATCHERY
2013	WALLEYE	325	7	PRIVATE HATCHERY
2014	WALLEYE	350	7	PRIVATE HATCHERY
2015	WALLEYE	312	7.5	PRIVATE HATCHERY

During the evening of May 27, 2015, the entire shoreline (1.2 miles) of Underwood Lake was electroshocked to determine the status of the fish populations of the lake. The survey was conducted following WDNR monitoring protocols for SEII (spring electrofishing 2) surveys for bass/panfish lakes and all species were netted for the entire shoreline.

RESULTS:

During the 40 minutes of electroshocking, we captured 123 individual fish representing eight species (Table 2). Largemouth bass and bluegill dominated the catch. Two northern pike in approximately the low 20-inch range were observed but were not able to be netted.

Table 2. Number of fish, average length, and length range of fish captured during electroshocking the entire shoreline (1.2 miles) of Underwood Lake on October 4, 2006 and May 27, 2015.

	October 2006				May 2015			
*COMMON NAME OF FISH	NUMBER	PERCENT	AVERAGE LENGTH	LENGTH RANGE (inches)	NUMBER	PERCENT	AVERAGE LENGTH	LENGTH RANGE (inches)
Black Crappie	3	0.8%	9.1	7.8 - 10.4	2	1.6%	8.9	8.3 - 9.5
Bluegill	282	71.0%	4.2	2.0 - 8.7	36	29.3%	6.4	3.7 - 10.5
Largemouth Bass	67	16.9%	9.7	3.5 - 17.7	73	59.3%	10.8	5.4 - 16.5
Northern Pike	2	0.5%	21.1	19.7 - 22.5	0	0.0%		
Pumpkinseed	1	0.3%	6.3	6.3	1	0.8%	5.7	5.7
Rock Bass	3	0.8%	4.3	3.0 - 6.9	3	2.4%	7.5	7.0 - 8.1
Walleye	0	0.0%			4	3.3%	7.9	7.6 - 8.5
Yellow Perch	30	7.6%	4.5	3.6 - 5.7	0	0.0%		
Pumpkinseed X Bluegill	1	0.3%			0	0.0%		
Yellow Bullhead	1	0.3%			3	2.4%		
Bluntnose Minnow	5	1.3%			0	0.0%		
Green Sunfish	2	0.5%			1	0.8%		
Total	**397**	**100.0%**			**123**	**100.0%**		

Gamefish

The 73 largemouth bass captured ranged in length from 5.4 to 16.5 inches, and had an average length of 10.8 inches. Only four bass were greater than the 14 inch minimum size for harvest.

Aging structures on up to five fish per half inch length bin were collected and the remaining fish measured. Scales were collected on bass below 12 inches, and the second dorsal spine was collected on bass 12 inches and greater. Ages 1 through 10 were represented, with ages 3, 4, and 5 being most common. Growth rates for bass were slow, with age 3 and older bass exhibiting slower growth than both the 2006 survey and the northeast Wisconsin average (Figure 1). It takes an average of 9 years for a largemouth bass to reach the legal size limit of 14 inches on Underwood Lake.

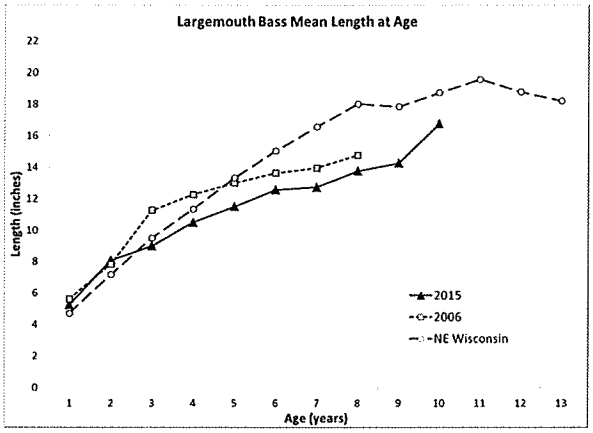

Figure 1. Mean length at age for largemouth bass in Underwood Lake, 2006 and 2015 compared to other lakes in northeast Wisconsin.

Four walleye were captured. All were in the 7-8 inch range and estimated at age 1. These fish were likely stocked the previous fall. No adult walleye were captured.

Panfish

Bluegill were the most common panfish captured, with a CPE of 30/mile and average length of 6.4 inches (Table 2). Scales on up to five fish per half inch length bin were collected and the remaining fish measured. Ages 1 through 7 were represented, with ages 2, 3, and 4 dominating. In contrast to largemouth bass, growth rates for bluegill exceed rates found in other northeast Wisconsin lakes (Figure 2).

Other species of fish captured during this survey included low numbers of black crappie, rock bass, pumpkinseed sunfish, green sunfish, and yellow bullhead. No yellow perch were captured in this survey.

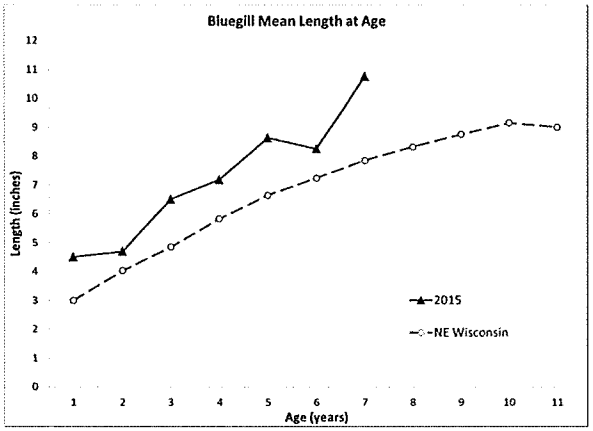

Figure 2. Mean length at age for bluegill in Underwood Lake, 2015 compared to other lakes in northeast Wisconsin.

DISCUSSION AND CONCLUSIONS:

Underwood Lake has a high density of largemouth bass. A CPE of 61 largemouth bass per mile is considered high. Growth rates of bass have slowed compared to 2006 survey data and it is possibly a result of intraspecific competition due to their high density. On the other hand, bluegill abundance is fairly low and size structure and growth rates are very good for this small lake. Panfish currently show no signs of stunting.

Bluegill historically became overabundant and stunted in Underwood Lake when there were few predators available to keep panfish numbers in check. Underwood Lake is small in area and lacks expansive spawning habitat for other predators such as northern pike and walleye to thrive. Therefore, I do not recommend any regulation changes that would further encourage bass harvest, despite their high abundance and slow growth rates.

Since no adult walleye were captured in this survey, I would encourage the Leigh Lake and Underwood Lake Conservation Club to discontinue stocking walleye at Underwood Lake. Walleye don't appear to be flourishing in this small, clear lake.

Underwood Lake is currently on a 10-year rotation for spring electrofishing surveys, and the next scheduled survey is planned for 2025.

A large bluegill collected on Underwood Lake in 2015.

ACKNOWLEDGEMENTS:
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